IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: **DONALD GILBERT CARPENTER** **Art Unit:** **2834**

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For: **Energy Conversion Technique** **Examiner: Nicolas Ponomarenko**

Declaration Under 37 C.F.R. ¶ 132

I, the undersigned Dr. Donald G. Carpenter, residing at 3010 River Mist Grove, Colorado Springs, CO 80922-5201 declare as follows:

I am a retired Air Force Colonel, pilot and Commander who has strong credentials and success in both academic and industrial careers.

Academically, I have a Ph.D. and a master's degree in nuclear engineering, plus bachelor degrees in physics, electrical engineering, and electronic engineering technology. I taught physics for seven years at the United States Air Force Academy, holding during that time an Associate Professorship. I created the space physics course at the Air Force Academy, editing and writing much of the 700+ page textbook for that course. I retired as a full Professor of physics (Chapman College) and full Professor of electrical engineering (Colorado Technical University), and Dean of electrical engineering and computer engineering (Colorado Technical University).

My published works include 27 scientific papers and books. Other scientific efforts include numerous published letters, abstracts and invited talks. I was, while on active duty in the Air Force, a recipient of the Theodore von Karman Award (for science and engineering) for dramatic improvement in the accuracy of the SPACETRACK System for tracking Earth-orbiting satellites.

Also, while on active Air Force duty, I received the Legion of Merit for management of the 16th Surveillance Squadron (a SPACETRACK radar organization in the Aleutian Islands). I subsequently commanded a worldwide AF operations organization. My last active duty position before retiring from the Air Force was Chief of Space Surveillance. I was, moreover, in charge of systems engineering (electronic) for Contel's contract to provide ground/space telecommunications at Falcon Air Base (Space Command); and was a principal engineer in enabling Falcon to function well.

Following my retirement from active Air Force duty I worked for COLSA as a telecommunications consultant to the Royal Saudi Air Defense Forces.

Among my further technical and scientific achievements, I was the first scientist to warn and prove theoretically (***Journal of Geophysics***) that nuclear reactors in orbit about Earth would

significantly increase the geomagnetically-trapped corpuscular radiation; subsequent Japanese experience with Russian Earth-orbiting reactors proved my analysis to be correct.

I also have held various other positions such as Senior Research Fellow for the International Society for Scientific Enquiry (ISPE).

Experimental Apparatus

The Experimental Apparatus equipment described herein is of minimum accuracy and precision, difficult to use, but quite inexpensive (see Figure 1). It is similar to that of a double pendulum. A wooden bar is supported at each end. Hanging by stranded picture wires from the wooden bar are two identical metal hex-head screws ([5/8]-11 4) so that, at the bottom of their respective swings, the heads of the screws engage endwise (and compress) a spring mounted between them. Each screw is suspended by two stranded wires, and each of those wires has one end attached to its own small hook screwed into one side of the wooden bar with the other end of the wire similarly attached to the other side of the wooden bar.

The screws are operated by swinging each of them back from the other, gaining potential energy as they necessarily rise to a pre-selected 'standard location'. They are released, allowing the potential energy to convert to kinetic energy as they return to their former lower positions and deposit the kinetic energy into the spring. The spring is made of 15 turns of number 19 steel wire coiled 33 millimeters long and of 11 millimeters outside diameter. Each screw head is larger than the diameter of the spring.

As shown in Figures 2 and 3, three paper cylinders are needed, with the first nested inside the second which is nested inside the third, so that each of the two nested cylinders slide relatively freely within the next larger cylinder. Their summed length needs to total greater than the length of the spring, each cylinder itself being less than 50% of the length of the spring (Figure 1). They are positioned in partially-nested fashion within the spring (Figure 3) so that their combined partially-nested length is the same as that of the 33 millimeter spring. Together, the spring and its enclosed partially-nested paper cylinders form an energy sensor. It is necessary that the paper cylinders have a small but non-zero amount of friction with respect to each other. Too little friction and the impact of the screw will cause the paper cylinders to over-respond; too much friction and the paper cylinders will not respond adequately. "Super Glue," a trademarked product is suitable for making the paper cylinders, but care must be taken to insure that the friction among the cylinders is adequate for the purpose of the experiment.

Experiment and Resultant Data

The experiment is tried three different times under each of three different conditions. The first condition is that the spring is suspended on thread below the wooden bar such that the screw heads will engage and compress it at their maximum speed (bottom of their paths). Before each trial, the partially-nested paper cylinders are placed within the spring so that one end of the largest cylinder is at one end of the spring and the contiguous opposite end of the smallest cylinder is at the other end of the spring. The length of the spring is recorded (x_0). Each screw is drawn back to its standard location, and they are released simultaneously. As the spring is struck on both ends approximately simultaneously and compressed, the total contiguous length of the

partially-nested paper cylinders is reduced as shown in Figure 4. The new total length of the paper cylinders is measured after the system has settled down, and that length is recorded (x_1). The difference between it and the recorded, uncompressed spring length yields a measure (x_0-x_1=Δx_1) of the amount the spring was compressed. After this has been done three times, the results are averaged, and the average value (Δx_{1A}) is recorded to a precision of one millimeter for this first condition.

The second condition, illustrated in Figure 5, is that the spring is bonded (with Super Glue) by one end to the head of Screw 1 so that the free end of the spring rests loosely against the head of Screw 2. One end of the partially-nested cylinders is against the Screw 1 end of the spring while the other end of the partially-nested cylinders is at the other end of the now-cantilevered spring. Screw 1 is fixed in position so that it will not move when the spring is struck by the head of Screw 2. Screw 2 is withdrawn to its standard position and released. Again the resultant total length of the nested cylinders (x_2) is measured, and the magnitude of the spring compression found (x_0-x_2=Δx_2). After this has been done three times and the results averaged, the average value (Δx_{2A}) is recorded to a precision of one millimeter for this second condition.

The third condition, shown in Figure 6, is similar to the second condition in that one end of the spring is still bonded to Screw 1, and the free end of the spring rests loosely against the head of Screw 2. One end of the partially-nested cylinders remains at the other contiguous end of the cantilevered spring. Screw 1 and Screw 2 are each withdrawn to their standard locations and released simultaneously. Again the total length of the nested cylinders (x_2) is measured, and the magnitude of the spring compressed found (x_0-x_3=Δx_3). After this has been done three times and the results averaged, the average value (Δx_{3A}) is recorded to a precision of one millimeter for this third condition.

Theory

The spring and nested cylinders form an energy sensing device. When, as shown in Figure 5, a single moving screw and a single stationary screw compress the spring, the magnitude of the Force (**F**) exerted on the spring at each instant is $\mathbf{F}=k(\mathbf{\Delta x})$, where k is the spring constant and ($\mathbf{\Delta x}$) is the amount of compression. Force through differential distance ($\mathbf{d[\Delta x]}$) is the differential Energy (dE) or work, which in integrated form for the second condition is $\mathbf{E_{2A}}=(\Delta x_{2A})^2(k/2)$. The value of $\mathbf{E_{2A}}$ is the potential energy of a suspended single Screw before release from its standard location, and that same Screw's kinetic energy as it initially encounters the near end of the spring.

The value of $\mathbf{E_{1A}}$ is the average of the sum of the potential energies of the two Screws ($\mathbf{E_{1A}}=2\mathbf{E_{2A}}$) that is deposited into the spring. Note that this conforms to the law of conservation of energy, and should be equal to approximately two times the potential energy of one screw.

The value of $\mathbf{E_{3A}}$ (illustrated in Figure 6) is a bit more of a problem for both minor and major reasons. The spring and nested paper cylinders are now part of Screw 1. The law of conservation of energy says that, when viewed from the position of the experimenter, the energy measured must equal approximately the sum of the potential energies ($\mathbf{E_{1A}}$) of the two screws at their standard locations, which is about two times the potential energy ($\mathbf{E_{2A}}$) of one screw at its

standard position. The word approximately is used because the mass of Screw 1 now includes the mass of the spring and nested paper cylinders with glue. This, though, is a minor problem because the combined mass of the spring, nested paper cylinders, and dried glue is a very small fraction of the mass of a screw. The increase in energy expended is, thus, a minor fraction of the kinetic energy of one screw alone.

The major problem is that the energy measuring device is now part of Screw 1's system. It does not 'see' itself as moving but does see the Screw 2 system approaching a speed 2v. This view is part of the concept first enunciated by Jules Henri Poincaré*: the laws of physics are the same in every frame of reference that is moving linearly with respect to each other. This means that $\mathbf{E_{3A}=4E_{2A}=2E_{1A}}$ instead of $\mathbf{E_{3A}=2E_{2A}=E_{1A}}$, as anticipated by the law of conservation of energy. Thus, because $\mathbf{E_{3A}-2E_{2A}=2E_{2A}}$, an extra $\mathbf{2E_{2A}}$ becomes available that comes from some source, the nature of which is not at all clear at this writing.

Results

The experimental results are shown in Table 1. Due to the lack of precision with these present experimental components, all numbers are rounded to the nearest millimeter, or to the nearest whole number in the case of fractions.

TABLE 1: Experimental Results

Condition	*Spring Length (mm)*		Δx_{CA}	$(\Delta x_{CA})^2$	$E_{CA}=(\Delta x_{CA})^2(k/2)$	E_{CA}/E_{2A}
	Original	Compressed				
C=1 (Cons. Energy)	33	26	7	49	49(k/2)	2
C=2 Cantilevered, One Screw, Immobilized	33	28	5	25	25(k/2)	1
C=3 Cantilevered, Both Screws Moving	33	23	10	100	100(k/2)	4

Conclusions

With respect to condition 1, the laws of conservation of momentum and conservation of energy both pertain. Both conservation of momentum and conservation of energy also pertain in condition 2. For condition 3, the law of conservation of momentum pertains and the law of conservation of energy is believed to pertain, the 'extra' energy ($2E_{2A}$) that appears in condition 3 coming from some source not previously recognized in such cases.

It must be emphasized that the device described in the instant patent application is no more a 'perpetual motion' machine than is a hydroelectric transformer. We do not know for

certain at this time from where the extra energy comes for this simple experiment just as we also do not know why a wire moving at a right angle (relative to a magnetic field) through a magnetic field produces an electrical potential between the two ends of the wire. Thus, we do not know why a hydroelectric generator works.

Turning to the claimed invention, it matters not from whence this energy actually comes, it only matters that the claimed apparatus is a device that accesses this energy form without regard to the source of the energy.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Date MARCH 4, 2003

Donald G. Carpenter

Reference

* H. Poincaré, 'L'etat Actuel et L'avenir de la Physique Mathematique' (The actual state and the path of mathematical physics) is the name of a lecture given at the St. Louis Conference, USA, 1904 September 24 (This information from the notes of Walter van der Kamp [died: 1998 January 26] was courteously supplied by C. van der Kamp 1998 August 25, Semi-private Communication).